

From: Oleg Tsai <tsai@physics.ucla.edu>
Subject: Re: SiPM tests
Date: July 7, 2014 4:42:25 PM EDT
To: woody <woody@bnl.gov>
Cc: Aschenauer Elke-Caroline <elke@bnl.gov>, Aschenauer Elke-Caroline <elke@mail.desy.de>, Ogawa Akio <akio@rcf.rhic.bnl.gov>, Eyser Oleg <keyser@bnl.gov>, mannel@bnl.gov, Sean Stoll <stoll@bnl.gov>, Gerard Visser <gvisser@indiana.edu>

Hi All,

for completeness see also J.Anderson talk for CMS upgrade at calor 2012 (Journal of Physics: Conf. Series 404(2012) 012019.

Figure 4. shows leakage current vs neutron flux and change of response to LED signal. This is quite different compare to what was shown at TIPS by W. Baldini (although this is not apple to apple comparison).

Thanks,
Oleg

From: "woody" <woody@bnl.gov>
To: "Aschenauer Elke-Caroline" <elke@bnl.gov>, "Aschenauer Elke-Caroline" <elke@mail.desy.de>
Cc: "Ogawa Akio" <akio@rcf.rhic.bnl.gov>, "Eyser Oleg" <keyser@bnl.gov>, mannel@bnl.gov, "Sean Stoll" <stoll@bnl.gov>, "Oleg Tsai" <tsai@physics.ucla.edu>, "Gerard Visser" <gvisser@indiana.edu>
Sent: Monday, July 7, 2014 1:07:19 PM
Subject: Re: SiPM tests

Hi Elke,

Here some of the new results on neutron damage in SiPMs I was mentioning during our call today. One is a recent publication in JINST, and the other is a talk that was presented at TIPP 2014 last month. I don't see Erika's name on either one of them, but she does have a recent paper together with Robert on X-ray damage to SiPMs which I've also included. I also checked the talks that were given at the 2014 CALOR Conference on the upgrade of the CMS Central and Outer Hadron Barrel Calorimeters, and while the talk a lot about the new Hamamatsu SiPMs they will be using, they don't give any new information on radiation damage other than what they shown at the 2012 CALOR Conference. The is only a statement in one of the talks saying they "can tolerate up to 220 uA of current for a 2.2 x 2.2 mm² device". I don't know what this means, but that's a lot of current ! As you can see from all of the other measurements, there are effects on the current, noise, single p.e. resolution and gain starting at about 10⁸ n/cm². I'm not sure how they plan to cope with this, but maybe you

can find out something more from Erika. If you do, please let us know.

Many thanks,
Craig